

Listing of Claims

1 - 61 (canceled)

62. (new) A method for remediating drilled cuttings containing oil and water from a wellbore, the method comprising

introducing drilled cuttings with oil and water to a system for remediation, the system including a thermal treatment system and a condensing system,

feeding a slurry of the cuttings with oil and water to the thermal treatment system and heating the drilled cuttings and oil and water therein producing heated cuttings and a stream with oil and water and solids therein, discharging the heated cuttings from the thermal treatment system,

feeding the stream with oil and water and solids therein to a dual component mechanical separation system producing a discharge stream with separated-out solids and a vapor with oil and water therein,

feeding the vapor to a condenser system producing a liquid stream, feeding the liquid stream to an oil/water separator apparatus producing an oil stream and a water stream,

wherein a cooling apparatus provides cooling fluid for cooling the condenser to enhance effectiveness of the condenser, the method further comprising

cooling the condenser with cooling fluid from the cooling apparatus.

63. (new) The method of claim 62 further comprising

quenching the vapor with oil and water therein in a quench system prior to feeding said vapor to the condenser system.

64. (new) The method of claim 63 wherein the quench system is operated so that its heat content remains substantially constant.

65. (new) The method of claim 62 wherein the dual component mechanical separation system includes centrifuge apparatus which receives and treats the stream with oil and water, the centrifuge apparatus producing a centrifuge stream with solids

4 therein, the dual component mechanical separation apparatus including cyclonic
5 apparatus which receives and treats the centrifuge stream producing a cyclone stream
6 to further separate the solids.

1 66. (new) The method of claim 65 wherein the cyclone stream is recycled back
2 to the centrifuge apparatus.

1 67. (new) The method of claim 63 further comprising
2 pumping uncondensed quenched vapor to the condenser system.

1 68. (new) The method of claim 62 further comprising
2 recirculating vapor through the dual component mechanical
3 separator system to enhance efficiency of solids separation by the dual
4 component mechanical separator system.

1 69. (new) The method of claim 62 wherein the dual component mechanical
2 separator system is insulated to reduce condensation of material within the dual
3 component mechanical separator system.

1 70. (new) The method of claim 62 further comprising
2 centrifuging the oil stream from the oil/water separator apparatus
3 to clean oil in said oil stream.

1 71. (new) The method of claim 62 wherein an initial mixture of wellbore
2 cuttings, oil, water and drilling fluid is fed to a shaker system, the method further
3 comprising

4 producing the slurry of drilled cuttings with oil and water with the
5 shaker system.

1 72. (new) The method of claim 62 further comprising, prior to feeding the
2 slurry to the thermal treatment system,

3 feeding the slurry through a secondary separator system to a
4 hopper,

5 separating large pieces of material from the slurry with the
6 secondary separator system, and then

7 feeding the slurry from the hopper to the thermal treatment
8 system.

1 73. (new) The method of claim 62 wherein the slurry includes fine particulates

2 and the dual component mechanical separator system is for removing fine particulates,
3 the method further comprising prior to feeding the stream with oil and water to the
4 condenser system,

5 separating out with the dual component mechanical separator
6 system fine particulates from the stream with oil and water.

1 74. (new) The method of claim 62 wherein the slurry has hydrocarbon
2 contaminants therein and the method further comprising
3 volatilizing the hydrocarbon contaminants in the thermal treatment
4 system to separate them from the slurry.

1 75. (new) The method of claim 62 wherein the slurry has volatilizable
2 contaminants therein and the method further comprising
3 volatilizing the volatilizable contaminants in the thermal treatment
4 system to separate them from the slurry.

1 76. (new) The method of claim 62 wherein the system includes heat exchange
2 apparatus and the method further comprising
3 cooling the liquid stream prior to feeding it to the oil/water
4 separator.

1 77. (new) The method of claim 62 further comprising
2 feeding the oil stream from the oil/water separator to the thermal
3 treatment system for fuel for the thermal treatment system.

1 78. (new) The method of claim 62 wherein the system includes rehydration
2 apparatus and the method further comprising
3 rehydrating the discharged heated cuttings from the thermal
4 treatment system with the rehydration apparatus to facilitate handling of the
5 heated cuttings.

1 79. (new) The method of claim 62 wherein the system includes scrubber
2 apparatus for cleaning heated cuttings exhausted from the thermal treatment system,
3 the method further comprising

4 scrubbing said heated cuttings with the scrubber apparatus.

1 80. (new) The method of claim 62 wherein the system includes scrubber
2 apparatus for cleaning solids exhausted from the dual component mechanical

separator, the method further comprising

scrubbing said solids with the scrubber apparatus.

81. (new) The method of claim 62 further comprising

feeding the heated cuttings from the thermal treatment system to mill apparatus for hydration.

82. (new) The method of claim 62 further comprising

feeding the separated-out solids from the dual component mechanical separator to mill apparatus for hydration.

83. (new) A method for remediating drilled cuttings containing oil and water from a wellbore, the method comprising

introducing drilled cuttings with oil and water to a system for remediation, the system including a thermal treatment system and a condensing system,

feeding a slurry of the cuttings with oil and water to the thermal treatment system and heating the drilled cuttings and oil and water therein producing heated cuttings and a stream with oil and water and solids therein, discharging the heated cuttings from the thermal treatment system,

feeding the stream with oil and water and solids therein to a dual component mechanical separation system producing a discharge stream with separated-out solids and a vapor with oil and water therein,

feeding the vapor to a condenser system producing a liquid stream, feeding the liquid stream to an oil/water separator apparatus producing an oil stream and a water stream,

producing noncondensables with the condenser, and

oxidizing the noncondensables, and

wherein the dual component mechanical separation system includes centrifuge apparatus which receives and treats the stream with oil and water, the centrifuge apparatus producing a centrifuge stream with solids therein, the dual component mechanical separation apparatus including cyclonic apparatus which receives and treats the centrifuge stream producing a cyclone

stream to further separate the solids.

84. (new) The method of claim 83 wherein the cyclone stream is recycled back to the centrifuge apparatus.

85. (new) The method of claim 83 wherein the noncondensables are oxidized in a thermal oxidizer.

86. (new) A method for remediating drilled cuttings containing oil and water from a wellbore, the method comprising

introducing drilled cuttings with oil and water to a system for remediation, the system including a thermal treatment system and a condensing system,

feeding a slurry of the cuttings with oil and water to the thermal treatment system and heating the drilled cuttings and oil and water therein producing heated cuttings and a stream with oil and water and solids therein, discharging the heated cuttings from the thermal treatment system,

feeding the stream with oil and water and solids therein to a dual component mechanical separation system producing separated-out solids and a vapor with oil and water therein, and wherein the dual component mechanical separation system includes centrifuge apparatus which receives and treats the stream with oil and water, the centrifuge apparatus producing a centrifuge stream with solids therein, the dual component mechanical separation apparatus including cyclonic apparatus which receives and treats the centrifuge stream producing a cyclone stream to further separate the solids,

feeding the vapor to a condenser system producing a liquid stream,

feeding the liquid stream to an oil/water separator apparatus producing an oil stream and a water stream, and

wherein the thermal treatment system comprises a vessel with an interior wall dividing the vessel into two intercommunicating chambers, the vessel having two spaced-apart ends and a burner at each end for heating the drilled cuttings in each chamber.

87. (new) The method of claim 86 wherein each burner is in a separate firebox

2 adjacent each chamber.

1 88. (new) The method of claim 86 wherein each burner is mounted within the
2 vessel.

1 89. (new) The method of claim 86 wherein the cyclone stream is recycled back
2 to the centrifuge apparatus.